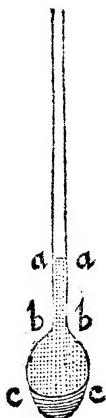


H. An Experiment touching the Freezing of Common Water, and Water Purg'd of Air. By Mr. Fr. Hauksbee, F. R. S.

THIS Experiment was recommended to me, in order to discover what difference would happen in the Swelling or Bulk of Ice, producible on the Freezing of Common Water, and Water Purg'd of Air. Accordingly I procur'd a couple of Glasses, in form of the Figure in the Margin. These, when fill'd with the different Waters to a determinate height, supposing at *a, a*, I convey'd into the Freezing Mixture, (which was nothing else but a Composition of Snow and Bay-Salt powder'd pretty fine) where they did not remain above three or four Minutes of time, before the Congelation began in each of them, which was very discernible, by the Ascent of the Water in their respective Tubes, above their first Heights *a, a*; and in about an Hours time, it had ascended in that Glass, which contain'd the Water purg'd of Air, at least 6 Inches; but in the other Glass with common Water, not so much by more than an Inch; there being such a Disparity in the Content of the two Glasses, the last mention'd being less by a fifth part than the other, which contain'd not full four Ounces. It was observable, that during the Glasses continuance in the Frigorifick Mixture, small Bubbles of Air did continually ascend in that which was fill'd with Common Water,

but



but not the least sign of any such appearance in the other. When I had taken them out of the premention'd Mixture, (which was at something more than an Hours time from their first putting in) I pour'd from them the Unfrozen Water, which gave me the Liberty of discovering the various forms the new made Ice had shot it self into. That Glafs which contain'd the Purg'd Water, appearing all over the Sides and upper part of it, to the very Neck *b b*, of divers Figures, much resembling those of Salts. The Bottom part of it *c c*, discover'd it self to be seemingly solid, but whitish, as if it was full of very minute inter-sperst Vacuities; but not like those Cavities, which are very observable in the Freezing of Common Water; and what was very notable, at the Bottom of the other Glafs they appear'd in great Numbers, of a longish Form, seemingly pointing all round from the Circumference to the Centre of it. There were none of those premention'd Salt-like Figures on the sides of this, as the other, but it was almost clear from any Adherence of Ice, savoring towards the upper part near the Neck, where a little had fasten'd it self with those longish Bubbles, pointing from that part downwards, inclining to the Centre. From all which I cannot but conclude, that the Ice produc'd from the Water purg'd of Air, was equally augmented in its Bulk to the Quantity of Water from which it was produc'd, as that which proceeded from the Frozen Common Water; for had the Glasses been of an equal Content, I see no reason to doubt, but the Water would have been equally Frozen in both, and the Ascent of the unfrozen part of them would have been much the same in their Tubes. But if there be any difference, the Water purg'd of Air seems to claim the easiest Disposition to be Frozen.

The Water I purg'd from Air in the following manner.

I first boyld it well over the Fire ; afterwards I included it in *Vacuo*, where it remain'd in that State till it was cold ; from whence I took it, and proceeded presently on the Experiment, which on two Tryals succeeded alike.

III. *An Account of an Experiment touching the Freezing of Common Water, Ting'd with a Liquid said to be Extracted from Shell-Lac. By Mr. Francis Hauksbee. F. R. S.*

THIS Liquid is a very deep Red ; a small quantity of which, will Tinge twenty times as much of Common Water of a very good Sanguine Colour hardly Transparent. I found this Liquor, Extracted from *Lac*, would not Freeze ; for during the Coldest Weather we have lately had, it retain'd its Fluidity ; and when it was mixt with Water, and expos'd to Freeze, the Water, in which it was mixt, soon suffer'd a Congelation ; and so much of it as underwent the Change, appear'd of a fine but pale Transparent Red ; the Body of the Colour retiring into the Middle, in form of the Figure *aa*, in the Margin, and was wholly Opake. And when no more of the mixt Liquid would be Frozen, I took the Body of Ice out of the Glass that contain'd it,

